Fundamentals of Asset Management

Step 5. Set Target Level of Service

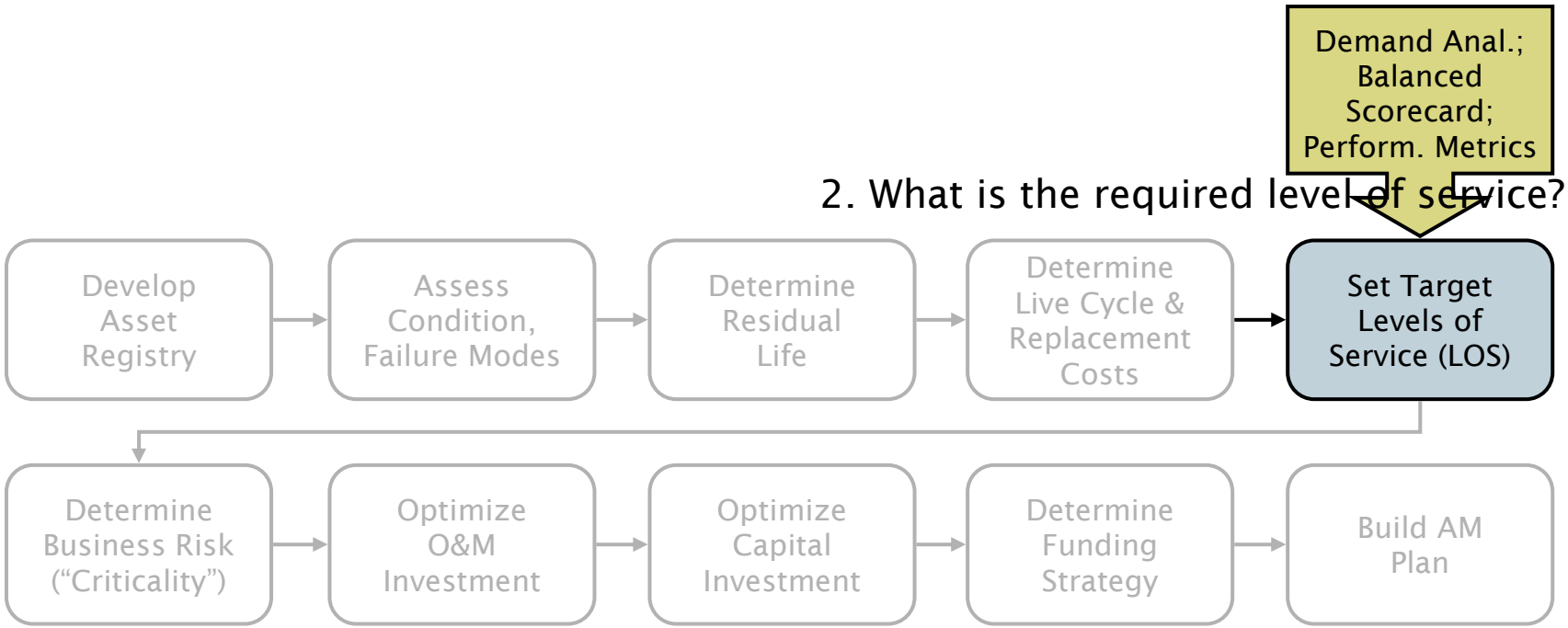
A Hands-On Approach

Tom’s bad day…

Second of 5 core questions

2. What is the required level of service (LOS)?
   - What is the *demand for my services* by my stakeholders?
   - What do *regulators require*?
   - What is my *actual performance*?

AM plan 10-step process



Level of service

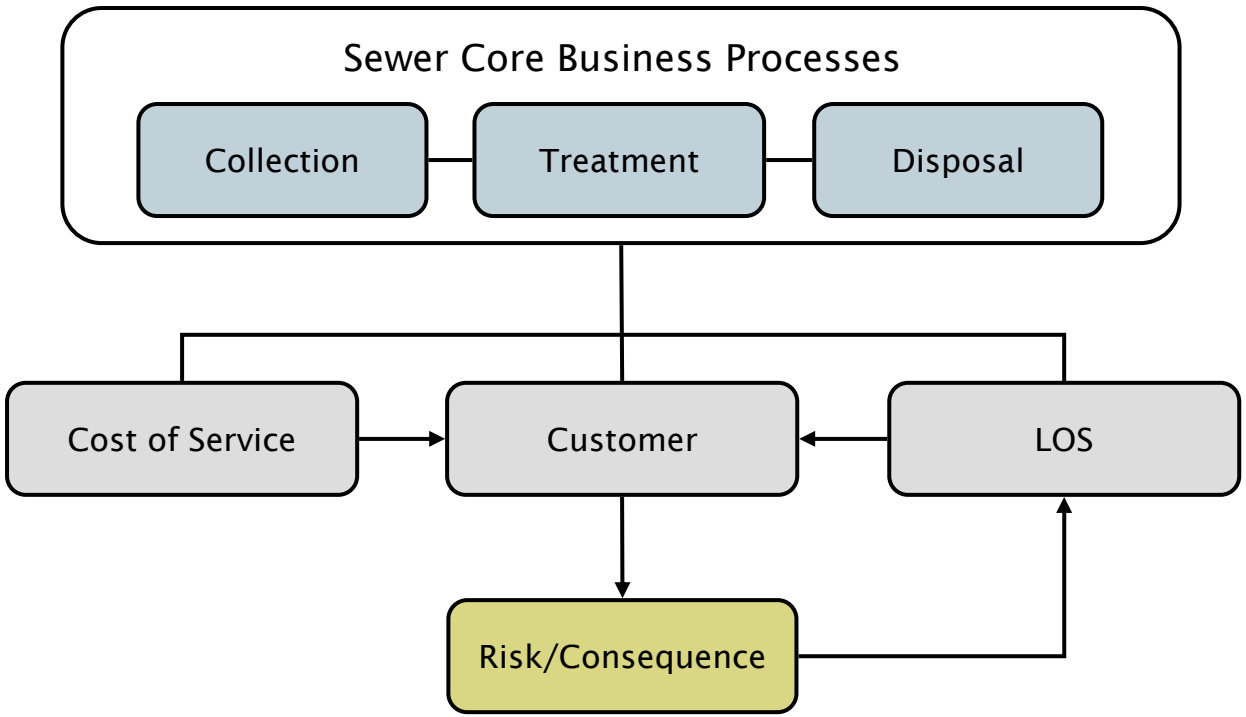
- Good, output-oriented management is driven by a defined standard or level of service
- Where that LOS is
  - Driven by *customer-user* demand
  - As determined by the appropriate legislative body in a political arena
  - Tied at the *strategic* organizational level to the *tactical* asset level
- LOS can be defined as
  - Characteristics or attributes of a service that describe its required level of performance
  - These characteristics typically describe *how much, of what nature,* and *how frequently* about the service

Why LOS?

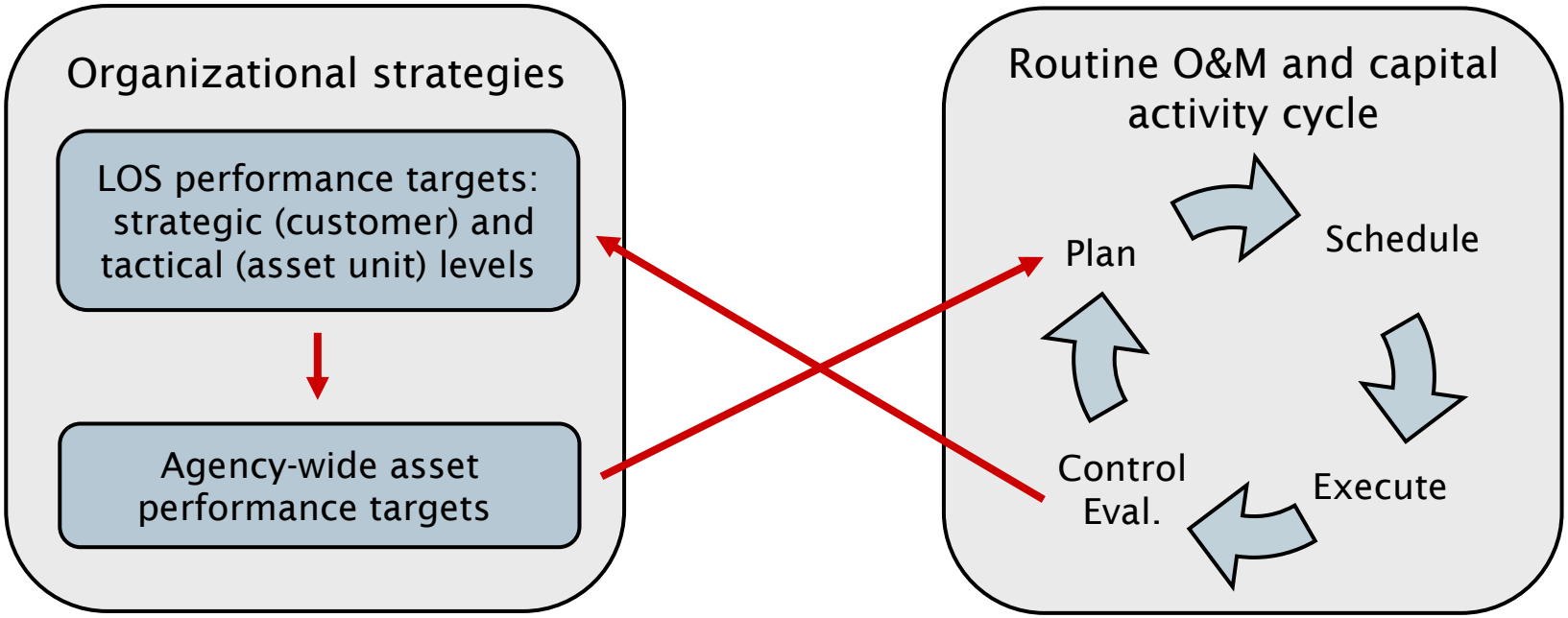
It helps us…

- *Concentrate* (focus) efforts and resources
  - On agreed on service levels
  - Less *service-level-defined by notion*
- *Communicate* service expectations and choices
  - Increased services equal increased costs
  - Discussion of trade-offs and risks
- *Negotiate* (regulators and council/commission/board)
  - Service levels
  - Costs and budgets
  - Rate impacts
  - Reinvestments for renewal
  - Level of risk

LOS's strategic position



Alignment of routine O&M and capital activities with organizational strategies



Nature of LOS

- LOS occurs at multiple levels
  - Agency-wide
  - Groups or systems of assets (collection system, treatment plants)
  - Assets (individual pump stations, digesters, clarifiers)
  - Key asset components (pumps, motors, vfd's)
- LOS targets are established to *roll up* to meet higher level targets

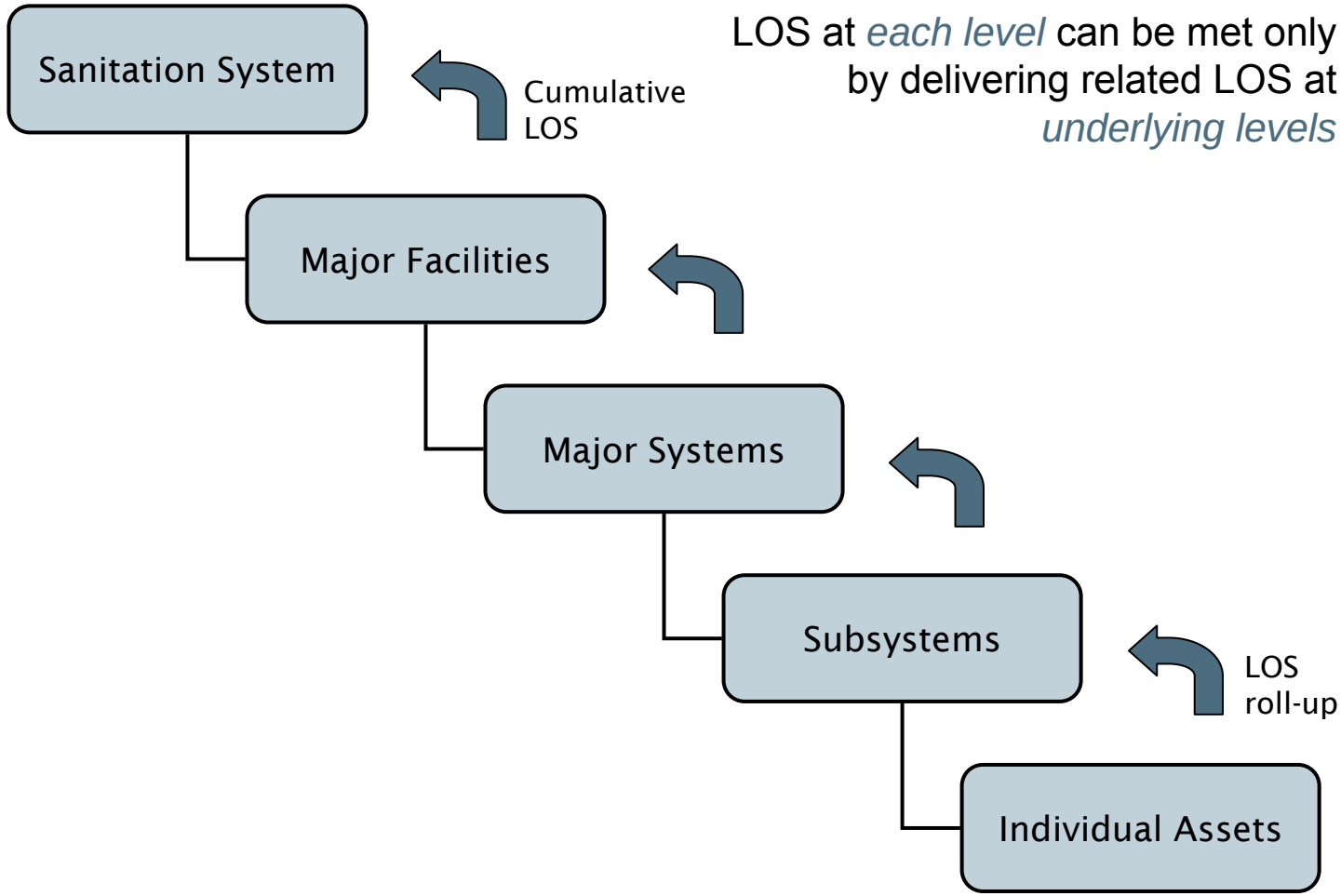
Nature of LOS, continued

There are internal and external LOS targets

- External LOS targets typically are strategic or KPI outcomes
  - Driven by customer-user demand
  - Confirmed or determined by the appropriate legislative body in a political arena
- Internal LOS targets typically are tactical and geared toward focusing activities

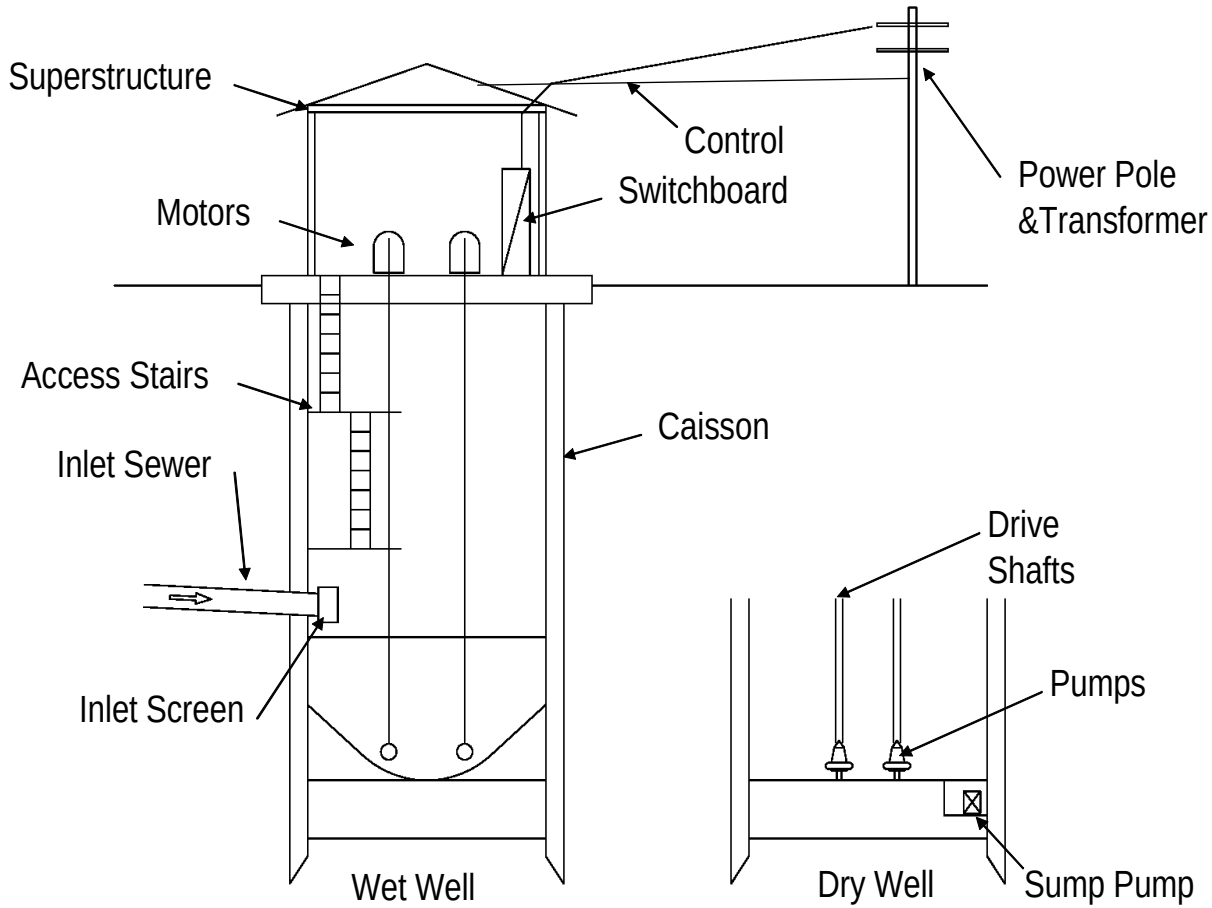
LOS is level of service, KPI is key performance indicator

Roll up of LOS



LOS at *each level* can be met only by delivering related LOS at *underlying levels*

Jones Street pump station cross-section view



Example of LOS statement

ENVIRONMENTAL

Key Performance Indicators
1. OCSD will comply with effluent quality standards.
a. Compliance with all Ocean Discharge Permit Limits, %
b. Concentration of Emerging Chemical Constituents of C Plant No. 1 Secondary Effluent
c. Ef fluent total coliform bacteria after initial dilution, mpn
d. Source Control permitee compliance with permit conditi percent
2. OCSD will manage flows reliably.
a. Frequency of use of emergency 1mile outfall
b. Sanitary sewer spills per 100 miles
c. Contain sanitary sewer spills within 5 hours
3. OCSD's effluent will be recycled.
a. Treated effluent reclaimed, % (flow)
4. OCSD will impleme nt a sustainable biosolids manageme program.
a. National Biosolids Program Certification for Environmen Management System
b. Percent of biosolids beneficial reuse Class "B" Class "A/EQ"
5. OCSD will improve the regional wa tershed.
a. Dry weather urban runoff collected and treated
b. Rainfall induced inflow and infiltration, wet weather pea
c. Stormwater management, % of treatment process area treated on site
d. Per capital wastewater flo w rate, gallons per person per da
6. OCSD will protect the air environment.
a. Odor complaints: Reclamation Plant No. 1 Treatment Plant No. 2 Collection System
b. Air emissions health risk to: Community, cancer risk per 1 million Em ployees
c. Air mass emissions permit compliance, %

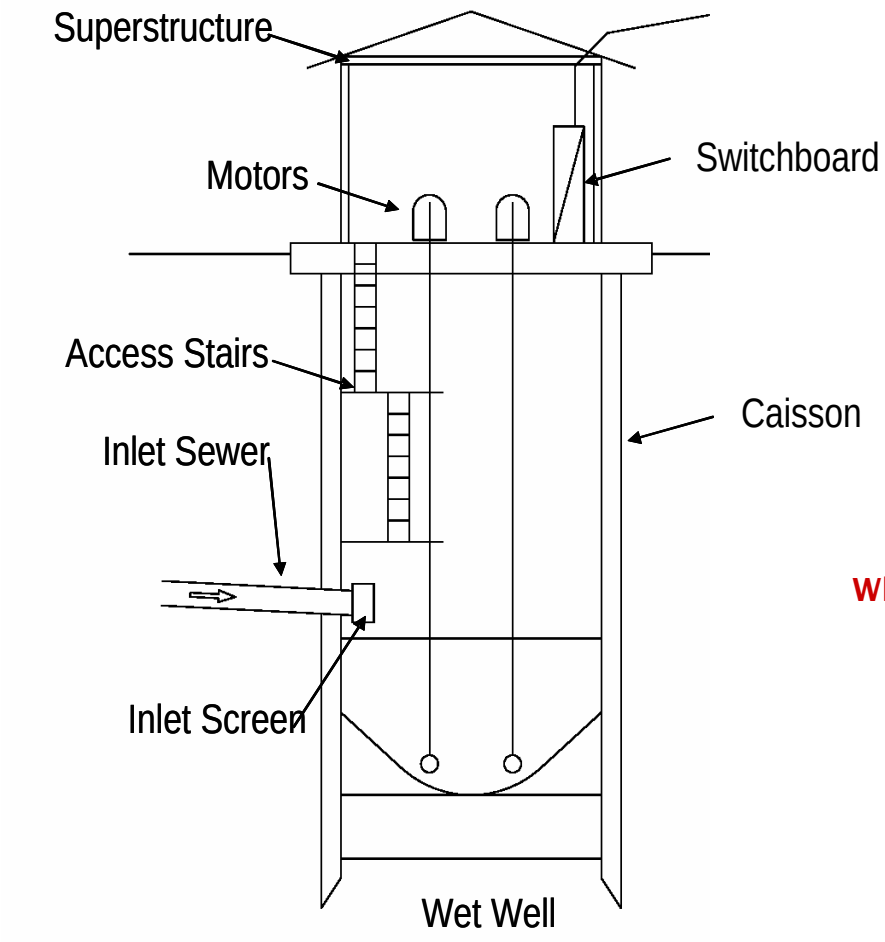
SOCIAL

Key Performance Indicators	2005 Target Level of Service
1. OCSD will be a good neighbor and will be responsive to its customers.	
a. Off site Biosolids nuisance complaints	0
b. Odor complaint response Treatment Plants within 1 hour Collection System within 1 working day	 100% 100%
c. Restore collection service to customer within 8 hours	100%
d. Respond to public complaints or inquiries regarding construction projects within 1 working day	>90%
e. Respond to collection system spills within 1 hour	100%
f. New connection permits processed within one working day	>90%
g. Dig Alert response within 48 hours	100%
2. OCSD will provide public access to OCSD information.	
a. Public Records Act requests within 10 working days	100%
b. Post Board/Committee Agenda Packages 72 hours prior to meeting	100%
c. Post studies and reports on OCSD website within 1 week of receive/file.	100%
3. OCSD will take care of its people.	
a. Training h ours per employee	45
b. Employee Injury Incident Rate	<3.75

ECONOMIC

Key Performance Indicators	2005 Target Level of Service
1. OCSD will exercise sound financial management.	
a. New borrowing	Not more than annual Capital Improvement Program requirements
b. COP coverage ratio	Between 1.25 and 2.0
c. COP service Principal and Interest	< than O&M expenses
d. Annual SFR user fee increase	not more than 15%
e. Annual user fees	Sufficient to cover a l O&M requirements
f. Annual increase in collection , treatment, and disposal costs per million gallons	< 10%
g. Annual variance from adopted reserve policy	<5%

Pump station LOS requirements



Which assets relate directly to achieving target levels of service?

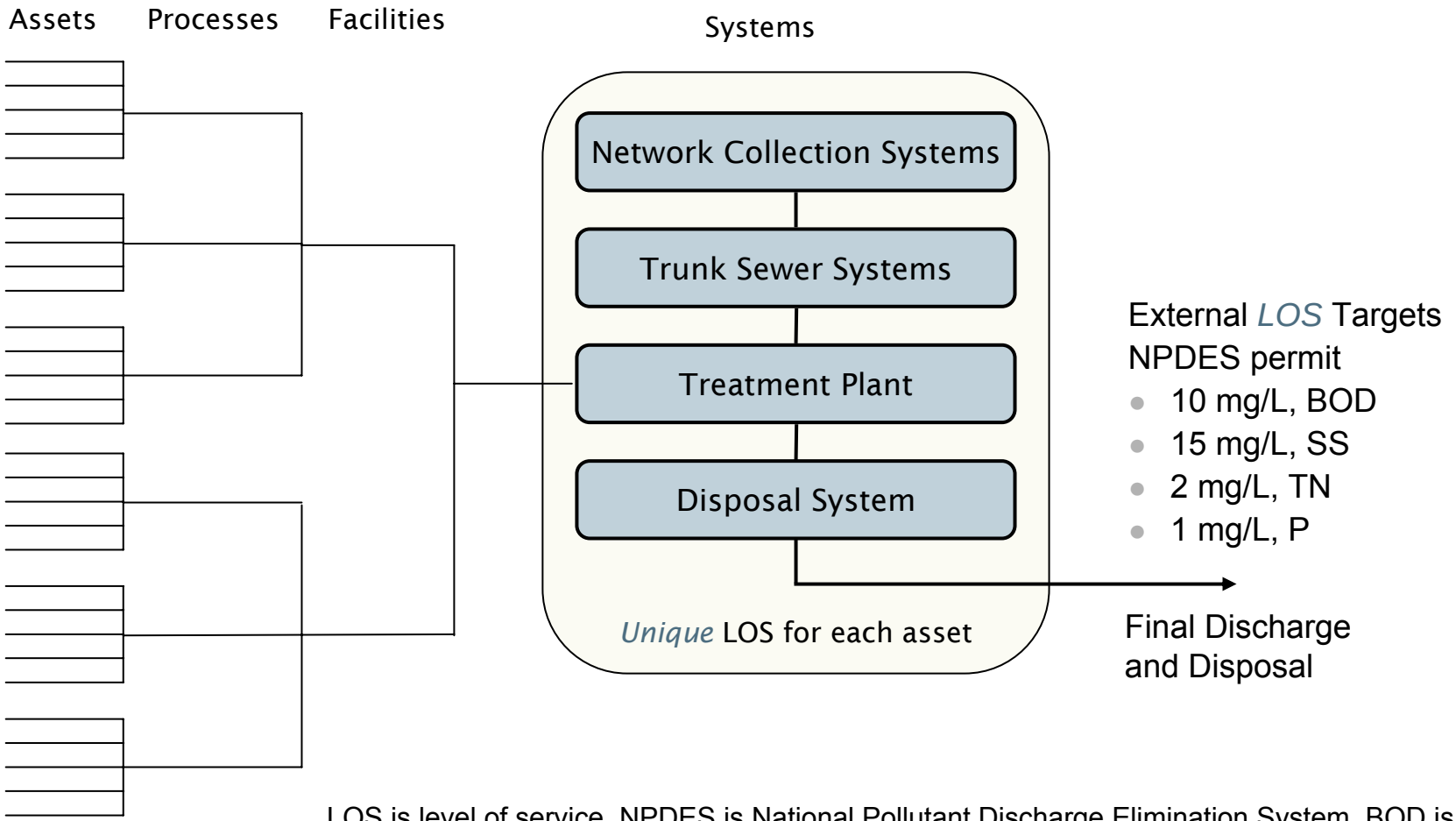
External *LOS for Pump Station*

- No preventable SSOs
- 3 odor complaints/year, max.
- 35 dB at boundary, max.
- OSHA compliance
- NPDES & CMOM compliance

Where in the lift station is noise generated?

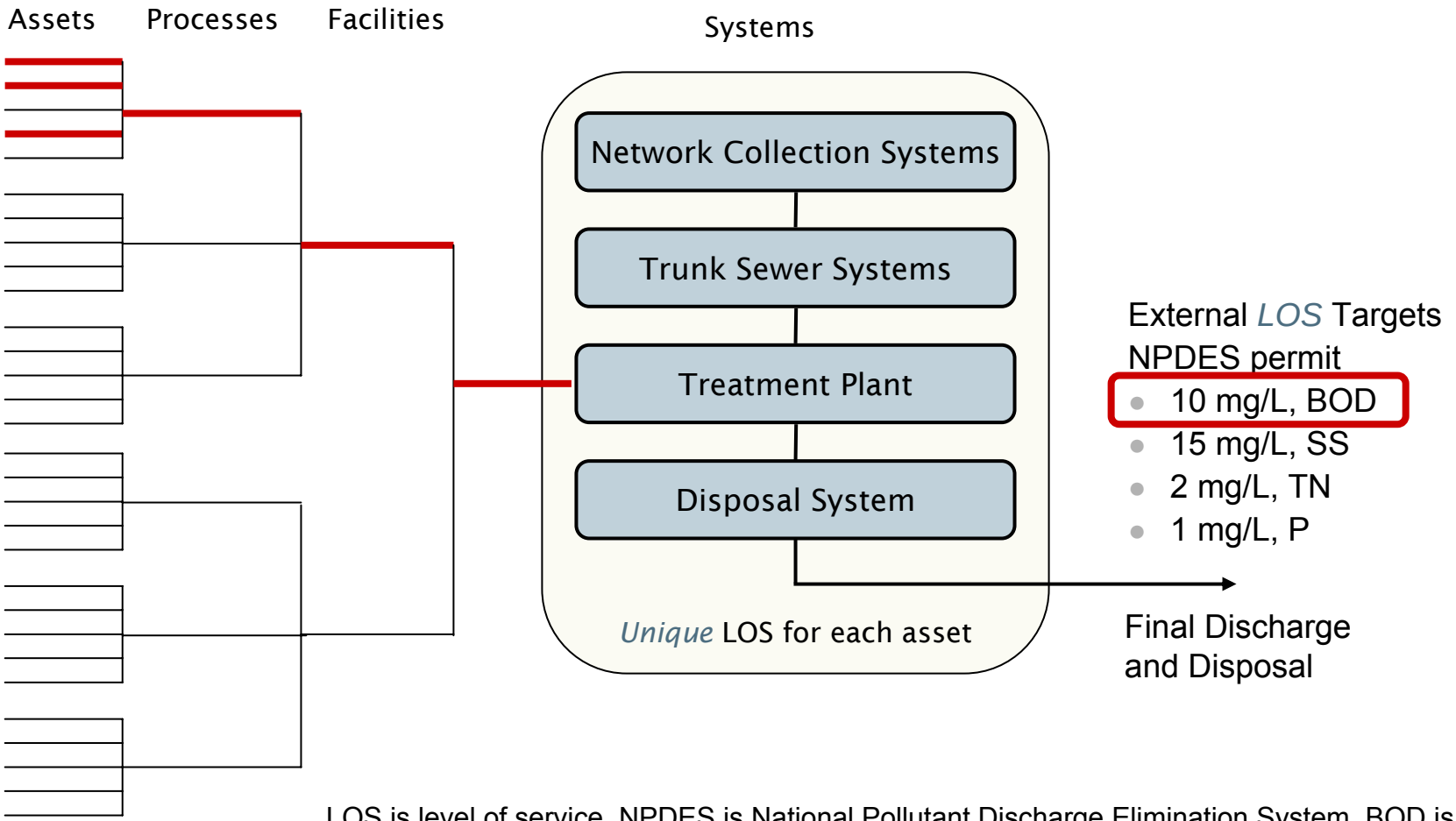
LOS is level of service, SSOs are storm sewer overflows, dB is decibel, OSHA is Occupational Safety and Health Administration, NPDES is National Pollutant Discharge Elimination System, CMOM is capacity, management, operation, and maintenance

System performance requirements



LOS is level of service, NPDES is National Pollutant Discharge Elimination System, BOD is biochemical oxygen demand, SS is suspended solids, TN is total nitrogen, P is phosphorus

System performance requirements



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Four major *failure modes*

Failure Mode	*Definition*	*Tactical Aspects*	*Management Strategy*
Capacity	Volume of demand exceeds design capacity	Growth, system expansion	Redesign
LOS	Functional requirements exceed design capacity	Codes & permits: NPDES, CSOs, OSHA, noise, odor, life safety; service, etc.	O&M optimization, renewal
Mortality	Consumption of asset reduces performance below acceptable level	Physical deterioration due to age, usage (including operator error), acts of nature	O&M optimization, renewal
Efficiency	Operations costs exceed that of feasible alternatives	Pay-back period	Replace

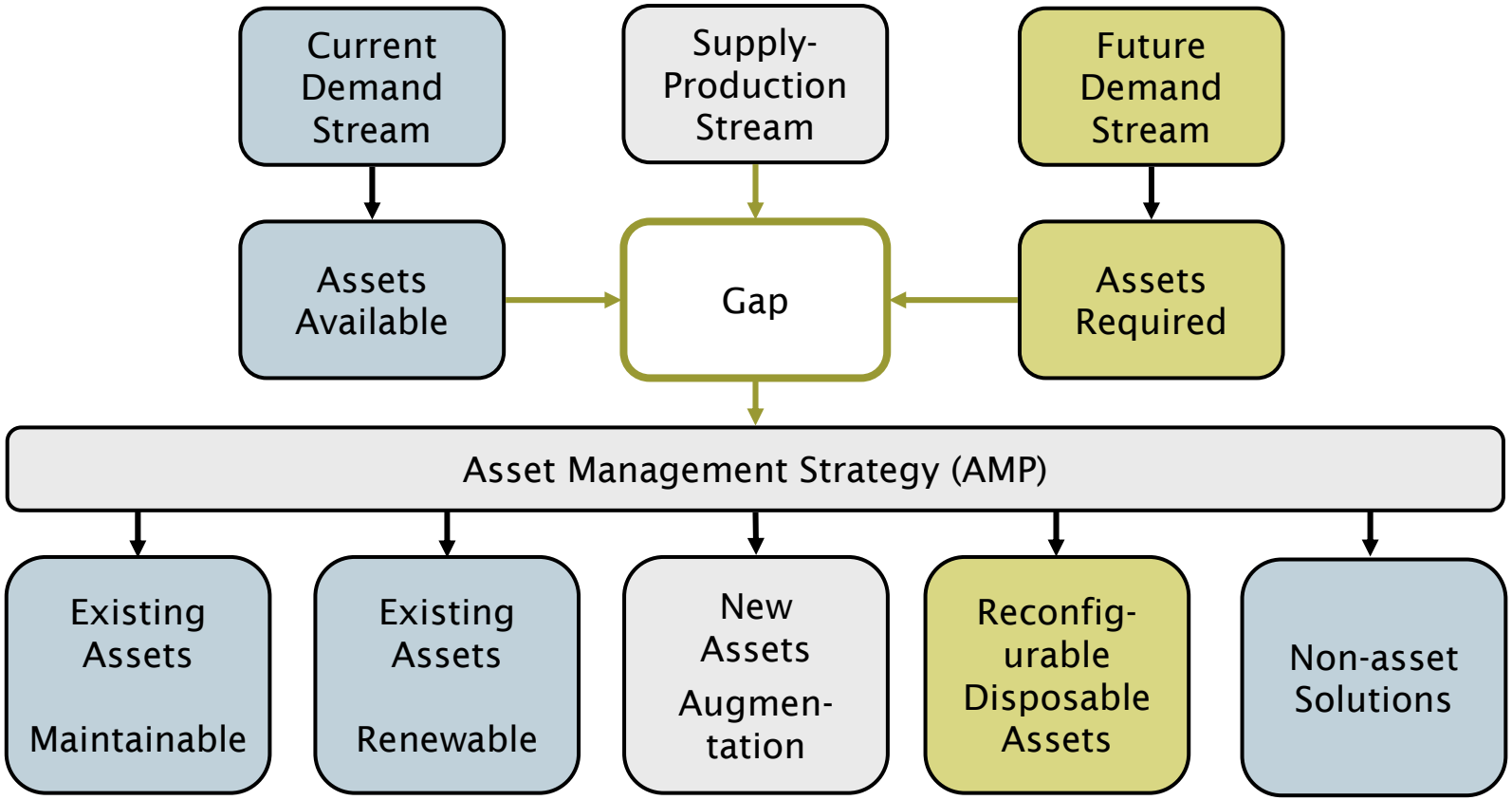
NPDES is National Pollutant Discharge Elimination System, CSOs are combined sewer overflows, and OSHA is Occupational Safety and Health Administration

Forces driving LOS

LOS is constantly subjected to forces of change:

- Growth/retrenchment
- Regulatory requirements
- Demands of customers
- Physical deterioration
- Operational costs/efficiencies

Balancing future demand with current capabilities



Example: Pump station LOS

Standard	*Measure*	*Current*	*Target*
Performance			
Odor	Complaints/year	0.5	1
	Number/year	2	0
Spills	Gallons/spill	56,000	2,000
Pumping	Percent influent	99.68%	100%
Reliability			
SCADA	Outages/year	7	2
	Duration, hours	72+	8
Power	Outages/year	1	1
	Duration, hours	7	2.5

Example: Pump station LOS

Standard	*Measure*	*Current*	*Target*
Reliability, cont.			
Pumps	% reserve capacity, peak Q	30%	30%
	% redundancy at peak Q	0	50%
Power	2nd source, hours	7	2.5
Regulatory			
Spill reporting	Verbal, hours	NA	24
	Report, days	21	10
	Impact notice, hours	NA	8
	Training, hours/yr	0	8

Key points from this session

What is my required sustainable level of service?

Key Points:

- LOS is the “collection of measurable attributes or characteristics of a product or service delivered” to a customer
- LOS is most useful in a long term perspective - “sustainable LOS”
- LOS is ultimately defined by customers and regulators through the agency’s Policy Board.
- System performance and customer satisfaction (“serviceability””) are related but separate concepts.
- LOS is directly related to the cost of service and the level of acceptable business risk.
- LOS is best measured across a range of balanced measures.
- Staff and Board should be involved in determining LOS, but it is not necessary that the Board be involved if they refuse.

Associated Techniques:

- Customer demand analysis
- Regulatory requirements analysis
- Level of service statements; LOS “roll-up” hierarchy
- Balanced scorecard”
- Asset functionality statements
- AM Charter

Tom's spreadsheet